

Software platform for mass supercomputing

Biryal'tsev E., Galimov M., Elizarov A.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2017, Pleiades Publishing, Ltd. An experience of designing integrated hardware and software solutions for high-performance computing in solving modern geophysical problems on the basis of full-wave inversion is described. Problems of designing mass high-performance software systems intended for extensive use in industry are discussed.

<http://dx.doi.org/10.1134/S1064562417020090>

References

- [1] G. Da Costa et al., Supercomp. Frontiers Innovations 2, 6–27 (2015).
- [2] V. B. Betelin, E. P. Velikhov, and A. G. Kushnirenko, Inf. Tekhn. Vychisl. Sist., No. 2, 3–10 (2007). http://www.jitcs.ru/index.php?option=com_content&view=article&id=178.
- [3] <http://www.top500.org/>.
- [4] P. R. Haffinger. <http://repository.tudelft.nl/view/ir/uuid%3Ad2d8d264-5037-4573-8418-a079afa8d1e7>. Submitted 2013.
- [5] N. Ya. Shabalin, V. A. Ryzhov, and E. V. Biryal'tsev, Priory Sist. Razved. Geofiz., No. 2, 46–53 (2013).
- [6] <http://top50.supercomputers.ru/?page=rating>.
- [7] The Fourth Paradigm: Data-Intensive Scientific Discovery. http://research.microsoft.com/en-us/UM/redmond/about/collaboration/fourthparadigm/4th_PARADIGM_BOOK_complete_HR.pdf.
- [8] Yu. V. Vasilevskii, I. N. Kon'shin, G. V. Kopytov, and K. M. Terekhov, INMOST—Software Platform and Graphical Environment for Developing Parallel Numerical Models on Grids of General Form (Izd. Mosk. Univ., Moscow, 2012) [in Russian].
- [9] T. Karras, S. Laine. Samuli, and G. J. Ward, Efficient Sparse Voxel Octrees—Analysis, Extensions, and Implementation. https://mediatech.aalto.fi/samuli/publications/laine2010tr1_paper.pdf.
- [10] M. Stonebraker and J. Kepner, Possible Hadoop Trajectories. <http://cacm.acm.org/blogs/blog-cacm/149074-possible-hadoop-trajectories/fulltext>.
- [11] Global Technology Leader in Visualization and Visual Compute. http://hue.no/sites/default/files/Hue_Brochure_US_web.pdf.
- [12] E. V. Biryal'tsev, P. B. Bogdanov, M. R. Galimov, D. E. Demidov, and A. M. Elizarov, Progr. Sist. Teor. Prilozh., No. 1 (28), 15–27 (2016). [http://psta.psiras.ru/2016/01\(028\)/r5/r5-7_.html](http://psta.psiras.ru/2016/01(028)/r5/r5-7_.html).